ABSTRACT OF THE DISCLOSURE

A hybrid analyzer having a data derived primary analyzer and an error correction analyzer connected in parallel is disclosed. The primary analyzer, preferably a data derived linear model such as a partial least squares model, is trained using training data to generate major predictions of defined output variables. The error correction analyzer, preferably a neural network model is trained to capture the residuals between the primary analyzer outputs and the target process variables. The residuals generated by the error correction analyzer is summed with the output of the primary analyzer to compensate for the error residuals of the primary analyzer to arrive at a more accurate overall model of the target process. Additionally, an adaptive filter can be applied to the output of the primary analyzer to further capture the process dynamics. The data derived hybrid analyzer provides a readily adaptable framework to build the process model without requiring up-front knowledge. Additionally, the primary analyzer, which incorporates the PLS model, is well accepted by process control engineers. Further, the hybrid analyzer also addresses the reliability of the process model output over the operating range since the primary analyzer can extrapolate data in a predictable way beyond the data used to train the model. Together, the primary and the error correction analyzers provide a more accurate hybrid process analyzer which mitigates the disadvantages, and enhances the advantages, of each modeling methodology when used alone.